Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 3. (Cancelled)

4. – 5. (Withdrawn)

6. – 7. (Cancelled)

8. (Withdrawn)

9. (Cancelled)

10. – 12. (Withdrawn)

13. – 14. (Cancelled)

15. (Withdrawn)

16. – 18. (Cancelled)

19. (Withdrawn)

20. – 23. (Cancelled)

24. (Withdrawn)

25. – 26. (Cancelled)

27. (Withdrawn)

28. – 29. (Cancelled)

30. – 60. (Withdrawn)

61. – 69. (Cancelled) (Previously Presented)

70. (Withdrawn) A method of interrogating a container, comprising the steps of:

a) irradiating the container for approximately 30 seconds with neutrons having energies between about 2.45 and 14 MeV or with a gamma ray beam having an energy of at least 10 MeV;

b) stopping the irradiating;

c) after stopping the irradiating, counting β-delayed gamma rays having an energy range between about 3 and 6 MeV for approximately 30 seconds;

d) making a first plot comprising number of β-delayed gamma rays counted in step c as a function of β-delayed gamma ray energy to produce an observed energy spectrum;

e) making a second plot of the total number of β-delayed gamma rays counted in a portion of the energy range as a function of time in order to determine an effective half-life;

f) comparing the observed energy spectrum with known energy spectra produced by fission products of special nuclear materials; and

g) concluding that there are special nuclear materials in the container when:

the observed energy spectrum and the known energy spectra have the same overall shape; and

the observed effective half-life is approximately 20 to 30 seconds or less.

71. (Currently Amended) The method of Claim ~~70~~80 wherein the neutrons comprise D-D neutrons.

72. (Currently Amended) The method of Claim ~~70~~80 wherein the neutrons comprise D-T neutrons.

73. (Currently Amended) The method of Claim ~~70~~80 wherein the gamma ray beam has an energy between approximately 10 and 30 MeV.

74. (Currently Amended) The method of Claim ~~70~~80 wherein a plastic or liquid scintillation detector is used for the counting step.

75. (Withdrawn) The method of Claim 70 wherein the portion of the energy range is between approximately 3 and 4 MeV.

76. (Withdrawn) The method of Claim 70 wherein the portion of the energy range is between approximately 4 and 6 MeV.

77. (Currently Amended) The method of Claim ~~70~~80 wherein, in step g, the observed energy spectrum and the known energy spectra having the same overall shape comprises having the same overall shape wherein the number of β-delayed gamma rays decreases as the energy increases at energies greater than approximately 3 MeV.

78. (Withdrawn) The method of Claim ~~70~~80 wherein:

the container has dimensions of approximately 8 feet by 40 feet by 8.5 feet and is made of steel;

the container holds at least 500 grams of Pu-239;

the neutrons have an energy of 14 MeV;

the neutrons have a flux of approximately 3.8 x 10^4 neutrons/cm^2 sec at a distance of approximately 15 feet from the container;

detectors surrounding the container on at least three sides and having at least 10% efficiency are used for the counting; and

at least 1000 β-delayed gamma rays with energies above 3 MeV are counted.

79. (Currently Amended) The method of Claim ~~70~~80 wherein:

the container has dimensions of approximately 8 feet by 40 feet by 8.5 feet and is made of steel;

the container holds at least 500 grams of U-235;

the neutrons have an energy of approximately 14 MeV;

the neutrons have a flux of approximately 3.8 x 10^4 neutrons/cm^2 sec at a distance of approximately 15 feet from the container;

detectors surrounding the container on at least three sides and having at least 10% efficiency are used for the counting; and

at least 350 β-delayed gamma rays with energies above 3 MeV are counted.

80. (New) A method of interrogating a container, comprising the steps of:

a) irradiating the container for approximately 30 seconds with neutrons having energies between about 2.45 and 14 MeV or with a gamma ray beam having an energy of at least 10 MeV;

b) stopping the irradiating;

c) after stopping the irradiating, counting β-delayed gamma rays having an energy range between about 3 and 6 MeV for approximately 30 seconds;

d) making a first plot comprising number of β-delayed gamma rays counted in step c as a function of β-delayed gamma ray energy to produce an observed energy spectrum;

e) making a second plot of the total number of β-delayed gamma rays counted in a portion of the energy range between about 4 and 6 MeV as a function of time in order to determine an effective half-life;

f) comparing the observed energy spectrum with known energy spectra produced by fission products of U-235; and

g) concluding that there U-235 in the container when:

the observed energy spectrum and the known energy spectra have the same overall shape; and

the observed effective half-life is approximately 20 to 30 seconds or less.